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(71) Applicant *(for all designated States except US)*: UNIVERSITY OF SOUTHAMPTON [GB/GB]; Innovation and Research Support, Highfield, Southampton SO17 1BJ (GB).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: DAY, Ian, Nicholas, Monsarratt [GB/GB]; 6 Victory Way, Rownhams, Southampton SO16 8JZ (GB). RASSOULIAN, Hamid [GB/GB]; 4 Fitzroy Close, Southampton SO16 7LW (GB).

(74) Agents: HOWARD, Paul, Nicholas et al.; Carpmaels & Ransford, 43 Bloomsbury Square, London WC1A 2RA (GB).

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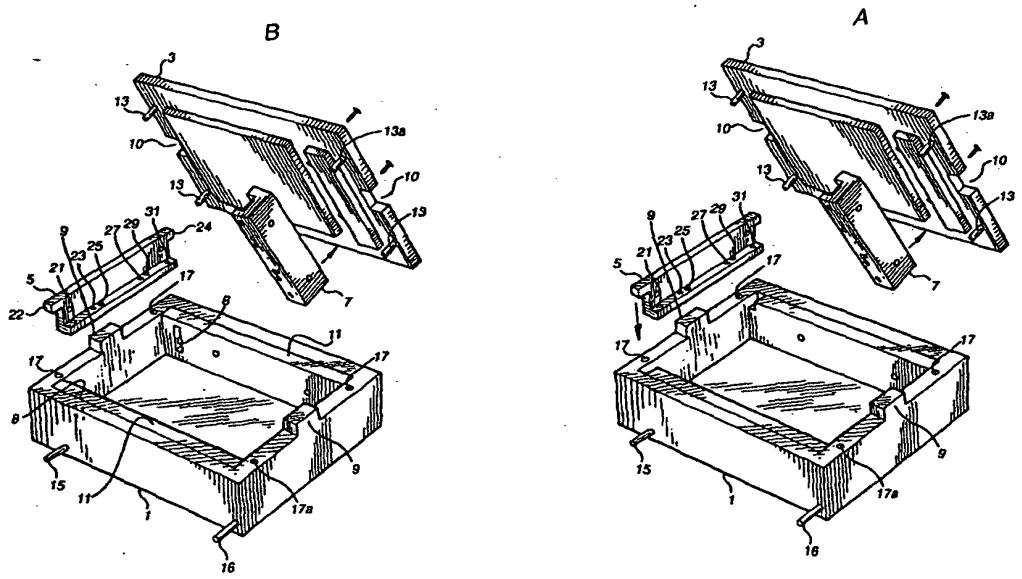

(57) Abstract

The first aspect of the present invention relates to an electrophoresis unit wherein one of the electrodes of the unit is attached to the lid (3). The second aspect of the present invention relates to an electrode support (5) for use in an electrophoresis unit. The third aspect of the present invention relates to an electrophoresis unit comprising a plate for receiving a gel-matrix which is resiliently mounted within a base (1) of the electrophoresis unit. The present invention also provides a frame (41) for stacking two or more elctrophoresis units wherein the frame provides power to each electrophoresis unit from a single power source.

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GEL ELECTROPHORESIS

The first aspect of the present invention relates to an electrophoresis unit wherein one of the electrodes of the unit is attached to the lid. The second aspect of the present invention relates to an electrode support for use in an electrophoresis unit. The third aspect of the present invention relates to an electrophoresis unit comprising a plate for receiving a gel-matrix which is resiliently mounted within a base of the electrophoresis unit. The present invention also provides a frame for stacking two or more electrophoresis units wherein the frame provides power to each electrophoresis unit from a single power source.

Electrophoresis of charged molecules, for example, DNA and RNA fragments using a gel-matrix of, for example, agarose or acrylamide is well known to those skilled in the art.

Electrophoresis units generally comprise a base portion for containing the gel-matrix, a pair of electrodes attached to opposite walls of the base and a lid. The electrodes are connected to a power source and are positioned so that an electrophoresis voltage is formed across the gel-matrix provided both electrodes are in contact with each other via an electrically conductive substance. Generally, the electrically conductive substance is a liquid buffer. When a liquid buffer is used, the electrophoresis is said to be wet electrophoresis. The electrophoresis voltage formed across the gel-matrix leads to separation of the charged molecules within the gel-matrix.

When the electrically conductive substance is the gel-matrix itself, the electrophoresis is said to be semi-dry electrophoresis or buffer-less electrophoresis. The electrodes of the electrophoresis unit can contact opposite ends of the gel-matrix directly or via a buffer soaked sponge, thereby forming an electrophoresis voltage across the gel-matrix.

Generally, relatively high voltages are used during electrophoresis (about 100 volts) and there is a risk of electrocution to the person operating the electrophoresis unit. Accordingly, electrophoresis units have been constructed whereby in normal use the electrodes which are present on the base unit can only be connected to the power source

when the lid of the unit is in place. Unfortunately, it has been found that it is easily possible to bypass the safety features of such units and directly connect the electrodes in the base to the power source without the lid being connected to the base or with a broken lid being connected to the base. Accordingly, there is a need in the art for an electrophoresis unit which reduces the risk of electrocution to the operator.

Electrodes of electrophoresis units generally take the form of an electrically conducting wire attached via its ends to a wall of the electrophoresis unit. Unfortunately, with use, the wire sags, becomes brittle and can easily be broken. There is therefore a need to provide an electrode which maintains substantially the same shape and has increased strength compared to the prior art electrodes. Electrodes for use in semi-dry electrophoresis contact the gel-matrix directly or via a buffer soaked sponge and it is therefore particularly important that the electrodes maintain substantially the same shape even after repeated and long term usage.

As indicated above, semi-dry electrophoresis units require contact between the electrodes and the gel-matrix either directly or via a buffer soaked sponge. In current semi-dry electrophoresis units, the electrodes are simply rested on the surface of the gel-matrix or on a wet strip of sponge which contacts the gel-matrix. A problem with using wet strips of sponge is that they need to be kept wet but not so wet that the samples in the gel are diluted. Unfortunately, and depending on the shape of the electrode and/or irregularities on the surface of the gel-matrix or buffer soaked sponge, the connection between the gel-matrix and the electrode can vary along the length of the electrode. In some situations the electrode will only contact the gel-matrix or buffer soaked sponge at isolated points. This will produce an uneven electrical field across the gel-matrix which will cause problems with the electrophoretic separation of the charged molecules. It is therefore desirable to improve the contact between the electrode and the gel-matrix.

Electrophoresis units, especially semi-dry electrophoresis units, are frequently used in fast, high throughput applications. In such applications, it is desirable to have means of running several units simultaneously which helps to organise batch processing of the samples. There is therefore a need for providing a system enabling several electrophoresis

units to be run simultaneously. The running of several electrophoresis units also leads to difficulty with limited bench space.

In a first aspect, the present invention provides an electrophoresis unit comprising a lid, a base for receiving a gel-matrix and a pair of electrodes which can be connected to a power source, wherein the first electrode is attached to the base and the second electrode is attached to the lid, and wherein when the lid is connected to the base, the electrodes are positioned so that a current can pass through the gel-matrix.

By having one of the electrodes on the lid and the other electrode on the base, it is impossible to run the electrophoresis unit without having the lid connected to the base. The electrophoresis unit according to the first aspect of the present invention therefore reduces the risk of the electrocution to the operator of the unit.

Preferably the electrodes of the electrophoresis unit according to the first aspect of the present invention are connected to the power source by terminals on the base of the unit, and the electrode attached to the lid is connected to a terminal on the base by an electrical connection formed between the base and the lid when the lid is connected to the base.

By ensuring that the electrode on the lid is disconnected from the power source when the lid is removed from the base, the risk of electrocution from contact with the electrode on the lid is removed because the electrode will only be electrically charged when the lid is connected to the base.

Alternatively, it is preferred that the electrodes are connected to the power source by terminals formed on the lid, wherein the electrode attached to the base is connected to a terminal on the lid by an electrical connection between the base and the lid.

It is further preferred that the electrical connections used to connect the lid to the base are of a different size compared to the electrical connections used to connect the power source to the terminals. By having different sized connections, the possibility of

connecting the power source to the electrical connection between the lid and the base instead of the to the terminals is avoided.

Preferably the electrical connection formed between the lid and the base comprises one or more plug-socket connections.

The electrophoresis unit may be an electrophoresis unit for performing wet or semi-dry electrophoresis.

The base and lid of the electrophoresis unit can be constructed from any suitable electrically inert material, especially plastics material such as polyvinyl chloride (PVC). It is particularly preferred that the electrophoresis unit, especially the lid, be constructed from transparent material.

The shape of the base of the electrophoresis unit will depend on the type of electrophoresis being performed. Suitable bases are well known to those skilled in the art. The base of the electrophoresis unit is preferably a shallow tray which has a surface for receiving a gel-matrix.

Preferably, the electrodes are attached to supports which form part of the base and the lid of the electrophoresis unit. Electrode supports are electrically inert supports of material which have an electrode attached to them by any suitable means such as clips or screws. The electrode support of the base may be a wall of the base. Preferably, the electrode supports are removable attached to the base and lid so that if an electrode breaks, the electrode can be easily replaced. Furthermore, when the electrophoresis unit is for semi-dry electrophoresis, the electrode supports can be removed, a gel-matrix inserted into the base of the unit and the electrode supports then replaced so that they contact a surface of the gel-matrix.

The electrode can be any electrically conducting material. Preferably the electrode is a wire or strip of electrically conducting material. Most preferably the electrode is platinum wire.

In a second aspect of the present invention there is provided an electrode support for use in an electrophoresis unit comprising an electrically inert support having at least three holes wherein an electrode is threaded through the holes.

The support can be any shape provided it is substantially non-flexible (i.e. rigid) in use. Preferably the support is a rectangular block.

Preferably, the electrode is threaded through the holes so that one face of the support has the electrode continuously present along its face in the region where the holes are formed. Preferably, the electrode is threaded through the holes in the support by backstitching.

The term "continuously present" as used herein means that the electrode is present on the face of the electrode support without any gaps. Furthermore, the region where the holes are formed is the region comprising the holes extending from the first hole to the last hole formed in the support.

The face on which the electrode is continuously present is preferably the face of the support which in use faces or contacts the gel-matrix.

Preferably the face on which the electrode is continuously present is a substantially planar face.

The electrically inert support can be constructed from any suitable material such as PVC. The electrically inert support can be an integral part of an electrophoresis unit such as a wall of a base or lid of an electrophoresis unit. Preferably, the support is removably attachable to the base or lid of an electrophoresis unit.

The electrode is any electrically conducting material which can be threaded through the holes formed in the support.

In a preferred embodiment, the electrode support comprises at least six holes and more preferably at least ten holes through which the electrode is threaded. The holes can be formed through the main body of the support or through protrusions formed on the support.

By threading the electrode through the holes, the electrode is firmly attached to the support and is supported. Accordingly, the electrode remains in substantially the same position on the support, has increased strength and is therefore less likely to break.

Preferably, the electrode support has two fixing terminals which anchor the ends of the electrode to the support. The fixing terminals are preferably screws or clips.

The present invention also provides an electrophoresis unit comprising at least one electrode support according to the second aspect of the present invention. Preferably, the electrophoresis unit comprises two electrode supports according to the second aspect of the present invention.

The electrophoresis unit comprising at least one electrode support according to the second aspect of the invention can be any wet or semi-dry electrophoresis unit.

When the electrode support is used with a semi-dry electrophoresis unit, the face of the electrode support having the electrode continuously present along the region of the face comprising the holes, contacts the gel-matrix directly or via a buffer soaked sponge. Preferably the face contacts the gel-matrix directly. As the electrode is firmly attached to the face of the electrode support, a better contact is made between the electrode and the gel-matrix or buffer soaked sponge improving the electrophoretic voltage formed across the gel-matrix.

In a third aspect of the present invention, there is provided a semi-dry electrophoresis unit comprising a base, a pair of moveable electrode supports, and a plate for receiving a gel-matrix resiliently mounted in the base and capable of movement relative to the base wherein when the electrodes are urged into contact with a gel-matrix placed on the plate, the plate is moved relative to the base and a firm contact is made.

The term "firm contact" means that the electrode present on the face of the electrode support that contacts the gel matrix is urged into contact with the gel-matrix so that contact along the length of the electrode on the face of the electrode support is made with the gel-matrix under pressure. The contact with the gel-matrix can be made directly or via a buffer soaked sponge. Preferably, the electrode contacts the gel-matrix directly.

Preferably the electrodes contact the gel-matrix directly at opposite ends.

Preferably the gel-matrix is held substantially horizontal in the electrophoresis unit.

The resiliently mounted plate is preferably mounted on spring means i.e. any resilient elements that allow the base to be resiliently movable relative to the base. The resilient elements can be any form of spring such as compression springs or even resilient rubber material such as rubber blocks or tubes which give the desired resilience. Preferably the spring means are elastic rubber tubes. The desired resilience leads to the electrodes contacting the gel-matrix under pressure leading to a firm contact, wherein the pressure is not so great as to break the gel-matrix or to squeeze buffer out of the buffer soaked sponge.

Preferably the plate is slightly smaller than the base and can therefore be housed within the base.

Preferably a lid is fixed to the base of the electrophoresis unit. It is further preferred that the lid urges the electrode supports onto the gel-matrix so that when the lid is connected to the base, the electrodes exert a pressure on the gel-matrix leading to a firm contact.

The preferred features of the first aspect of the present invention, which are applicable to the second or third aspects of the present invention, are also preferred features of the second and third aspects of the present invention.

In a fourth aspect of the present invention, there is provided a frame for stacking two or more electrophoresis units, wherein the frame is connected to a single power supply

and has a set of connections for each electrophoresis unit to be stacked in the frame, wherein these connections are arranged in a parallel electrical circuit.

The frame therefore provides a power supply to two or more electrophoresis units which may be stacked therein.

Preferably the frame comprises a number of shelves for stacking each electrophoresis unit, wherein on placing the electrophoresis unit on the shelf, it is automatically connected to a set of electrical connections. It will be appreciated that an electrophoresis unit can be placed on a shelf so that electrical connections are not made to the frame. Each shelf is preferably formed by a pair of arms.

The frame allows the running of several units simultaneously as each unit is supplied by the same power supply. Furthermore, by stacking the units on the frame, the amount of space taken up by the various electrophoresis units is reduced.

It is further preferred that the frame of the present invention can be connected to other similar frames in order to form a larger multi-framed system all connected to the same power supply.

The present invention is now described further, by way of example only, with reference to the accompanying drawings in which:

Figure 1A is an exploded view of an electrophoresis unit according to the first aspect of the present invention.

Figure 1B is an exploded view of an alternative electrophoresis unit according to the first aspect of the present invention.

Figure 2 shows an electrode support according to the second aspect of the present invention.

Figures 3A and 3B show respectively, a side view of an electrophoresis unit according to the third aspect of the present invention before the plate is compressed and when the plate is compressed.

Figures 4A and 4B show respectively, a side view of an alternative electrophoresis unit according to the third aspect of the present invention before the plate is compressed and when the plate is compressed.

Figure 5 shows a frame according to the fourth aspect of the present invention.

With reference to Figures 1A and 1B, an electrophoresis unit is described comprising a base (1) in the form a shallow tray, a lid (3) and electrode supports (5 and 7). The first electrode support (5) is slidably inserted into the base (1) at one end as shown by the arrow in Figure 1A. Alternatively, the first electrode support (5) is slidably connected to the base at one end as shown in Figure 1B. In Figure 1B tongues (22 and 24) of electrode support (5) slidably engage grooves (8) formed in guide blocks (11) removably attached to the longitudinal walls of the base as shown in Figure 1B.

As shown in Figures 1A and 1B the second electrode support (7) is attached to the lid by screws. The lid (3) is connected to the base by a series of plugs (13) positioned at the corners of the lid (3) which engage with sockets (17) formed at the corners of the base. Protrusions (9) on the top of the walls of the base (1) engage grooves (10) formed in the lid (3) so as to assist in the attachment and removal of the base (1) and lid (3).

The base (1) comprises electrical terminals (15 and 16) for connecting the electrodes of the electrode supports (5 and 7) to a power source. The electrode of the first electrode support (5) when slidably connected to or inserted into the base (1) forms an electrical connection to a first terminal (15). The electrode on the second electrode support (7) forms an electrical connection to the second terminal (16) via an electrical plug (13a) and socket (17a) connection made when the lid (3) is connected to the base (1). The second terminal (16) has a direct electrical connection to socket (17a) and when the lid (3) is connected to the base (1) an electrical connection is made between socket (17a) and plug (13a). As plug (13a) is electrically connected to the electrode on the second electrode

support (7) the electrode is connected to a power source. When the lid (3) is removed, the electrical connection between the electrode on the second electrode support (7) and the second terminal (16) is broken.

Figure 2 shows an electrode support (5) having an electrode (19) threaded through a series of holes (21 to 31) in the support (5).

The electrode support (5) has six holes (21 to 31) which pass from one face (32) of the support through to a face (33) that contacts a gel-matrix when the electrode is used in a semi-dry electrophoresis unit. A platinum wire electrode (19) is passed through hole (21) from face (32) to face (33), then through hole (25) from face (33) to face (32), then through hole (23) from face (32) to face (33), then through hole (29) from face (33) to face (32) and then through hole (27) from face (32) to face (33), and finally through hole (31) from face (33) to face (32). The electrode (19) is thereby backstitched onto the electrode support (5).

The electrode support (5) has a face (33) which has an electrode continuously present along its face in the region where the holes are formed. The ends of the electrode are anchored to the support by screws (34) and are connected to a power source via an electrical connection (not shown in Figure 2).

An electrophoresis unit having a resiliently mounted plate (35) is described with reference to Figures 3A and 3B. An alternative electrophoresis unit having a resiliently mounted plate (35) is described with reference to Figures 4A and 4B. The base (1) of the electrophoresis units is shown in cross section in the Figures. A plate (35) for receiving a gel-matrix (39) which fits in the base (1) of the electrophoresis units, is mounted on compression springs (37). A lid (3) with electrode support (7) attached is shown in Figures 3A and 4A before connection to the base (1). In Figures 3B and 4B the lid (3) is shown attached to the base (1).

In use, electrode supports (5 and 7) as shown in the Figures contact a gel-matrix (39) placed on plate (35), wherein face (33) contacts the gel-matrix (39). In Figures 3A and 3B, electrode support (5) is slidably inserted into the base (1) as described above with reference to Figure 1A. Electrode support (7) is removably attached to the lid (3). The top

edges of the electrode supports (5 and 7) extend above the top of the walls of the base (1) (Figure 3A). By connecting the lid (3) to the base (1) the top edges of the electrode supports (5 and 7) become flush with the top of the walls of the base (1). The electrode supports (5 and 7) are then held under pressure against the gel-matrix (39) causing the plate (35) to become compressed towards the bottom of the base (1) (Figure 3B). A firm contact is made between the electrodes on the electrode supports (5 and 7) and the gel-matrix (39).

In Figures 4A and 4B electrode support (5) is slidably connected to the base (1) as described above with reference to Figure 1B. Electrode support (7) is removably attached to the lid (3). Electrode support (5) is held at its uppermost position within grooves (8) by the resiliently mounted plate (35) (Figure 4A). By connecting the lid (3) to the base (1) the electrode supports (5 and 7) are held under pressure against the gel-matrix (39) causing the plate (35)
to become compressed towards the bottom of the base (1) (Figure 4B). Electrode support (7) is sized to ensure that when the lid (3) is connected to the base (1) that the gel-matrix (39) and the plate (35) are held substantially horizontal.

With reference to Figure 5, a frame (41) for stacking electrophoresis units is described. The frame (41) comprises two columns (43 and 45), a top beam (47), a bottom beam (49) and two side-supports (50) (only one is shown in Figure 5) for increasing stability. The columns (43 and 45) have an equal number of arms extending perpendicular to the longitudinal axis of the columns. An arm of the first column (43) and the corresponding arm on the second column (45) form a shelf for receiving an electrophoresis unit.

Each column has a surface (51) associated with each arm. The surface (51) abuts the side of an electrophoresis unit placed on the arm. The surface (51) has an electrical connection (not shown in Figure 5). Two electrical connections are associated with each shelf, one on each column (43 and 45). The electrical connections are separated by the same distance as the terminals (15 and 16) on the electrophoresis unit to be placed on the shelf so that when the electrophoresis unit is placed on the shelf, the terminals (15 and 16) of the unit engage the electrical connections on the frame (41).

At the top of the second column (45), terminals (53) are provided for connecting the frame (41) to a power source. The columns and beams have hollow channels enabling the necessary electrical connections to be made using electrical cable. The electrical connections are made in parallel making one column positive and one column negative.

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It will of course be understood that the present invention has been described purely by way of example, and that modifications of detail can be made within the scope of the invention.

Claims

1. An electrophoresis unit comprising a lid, a base for receiving a gel-matrix and a pair of electrodes which can be connected to a power source, wherein the first electrode is attached to the base and the second electrode is attached to the lid, and wherein when the lid is connected to the base, the electrodes are positioned so that a current can pass through the gel-matrix.

2. The electrophoresis unit of claim 1, wherein the electrodes are connected to the power source by terminals on the base of the unit and wherein the electrode attached to the lid is connected to a terminal on the base by an electrical connection formed between the base and the lid when the lid is connected to the base.

3. The electrophoresis unit of claim 1, wherein the electrodes are connected to the power source by terminals on the lid of the unit and wherein the electrode attached to the base is connected to a terminal on the lid by an electrical connection formed between the base and the lid when the lid is connected to the base.

4. The electrophoresis unit of any one of the preceding claims, wherein the base and lid are constructed from PVC.

5. The electrophoresis unit of any one of the preceding claims, wherein the electrodes are attached to supports which are attached to the base and the lid, respectively.

6. The electrophoresis unit of claim 5, wherein the electrode supports are removably attached to the base and lid, respectively.

7. The electrophoresis unit of any one of the preceding claims, wherein the electrode is platinum wire.

8. An electrode support for use in an electrophoresis unit comprising an electrically inert support having a least three holes wherein an electrode is threaded through the holes.

9. The electrode support of claim 8, wherein the electrode is threaded through the holes so that one face of the support has the electrode continuously present along its face in the region where the holes are formed.

10. The electrode support of claim 8 or claim 9, wherein the electrode is threaded through the holes in the support by backstitching.

11. The electrode support of any one of claims 8 to 10, wherein the electrically inert support is constructed from PVC.

12. The electrode support of any one of claims 8 to 11, wherein the electrode is a wire or strip of an electrically conducting material.

13. The electrode support of claim 12, wherein the electrode is a platinum wire.

14. The electrode support of any one of claims 8 to 13, comprising at least six holes through which the electrode is threaded.

15. An electrophoresis unit comprising at least one electrode support according to any one of claims 8 to 14.

16. The electrophoresis unit according to claims 7 or claim 8 comprising the electrode support of any one of claims 8 to 14.

17. A semi-dry electrophoresis unit comprising a base, a pair of moveable electrode supports, and a plate for receiving a gel-matrix resiliently mounted in the base and capable of movement relative to the base wherein when the electrodes are urged into contact with a gel-matrix placed on the plate, the plate is moved relative to the base and firm contact is made.

18. The electrophoresis unit of claim 17, wherein the electrodes contact the gel-matrix at opposite ends.

19. The electrophoresis unit of any one of claims 17 to 18, wherein the gel-matrix is held substantially horizontal in the electrophoresis unit.

20. The electrophoresis unit of any one of claims 17 to 19, wherein the resiliently mounted plate is mounted on spring means.

21. The electrophoresis unit of any one of claims 17 to 20, wherein the base is constructed from PVC.

22. The electrophoresis unit of any one of claims 17 to 21, wherein the electrode supports are removable attached to the electrophoresis unit.

23. The electrophoresis unit of any one of claims 17 to 22, wherein the electrode of the electrode supports is platinum wire.

24. The electrophoresis unit of any one of claims 17 to 22, wherein the electrode supports are the electrode supports of any one of claims 8 to 14.

25. The electrophoresis unit of any one of claims 17 to 24, wherein a lid is fixed to the base.

26. The electrophoresis unit of any one of claim 25, wherein the lid forces the electrode blocks into contact with the gel-matrix under pressure.

27. The electrophoresis unit of claim 25 or claim 26, wherein one of the electrode supports is connected to the lid.

28. An electrophoresis unit according to any one of claims 1 to 7, 15 and 16, wherein the base has a resiliently mounted plate.

29. A frame for stacking two or more electrophoresis units, wherein the frame is connected to a single power supply and has a set of connections for each electrophoresis

unit to be stacked in the frame, wherein these connections are arranged in a parallel electrical circuit.

30. The frame of claim 29, for stacking electrophoresis units according to any one of claims 1 to 7 or claims 17 to 28.

31. An electrophoresis unit substantially as herein described with reference to Figure 1.

32. An electrode support substantially as herein described with reference to Figure 2.

33. An electrophoresis unit substantially as herein described with reference to Figures 3A and 3B.

34. A frame substantially as herein described with reference to Figure 4.

FIG. 1A

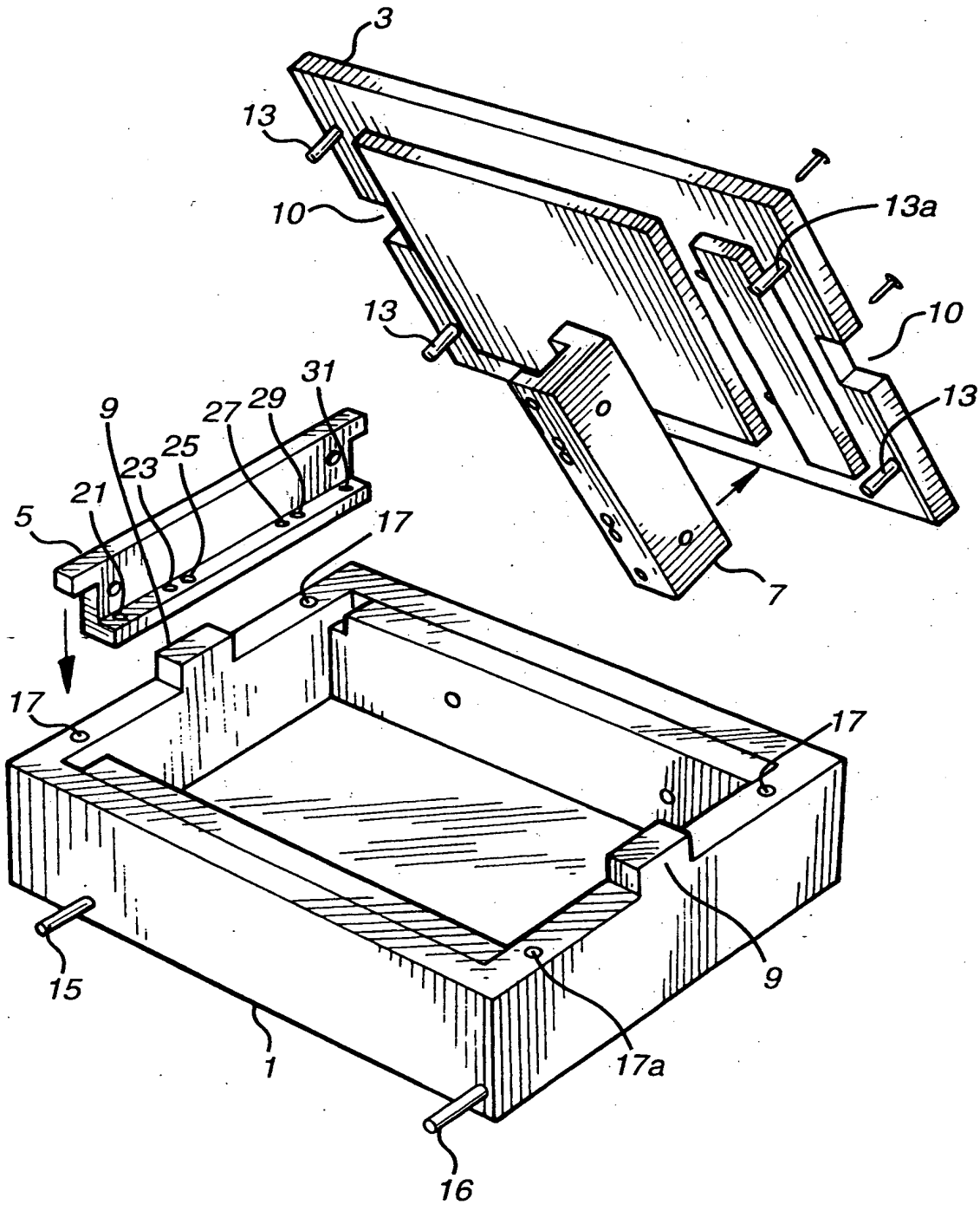

FIG. 1B

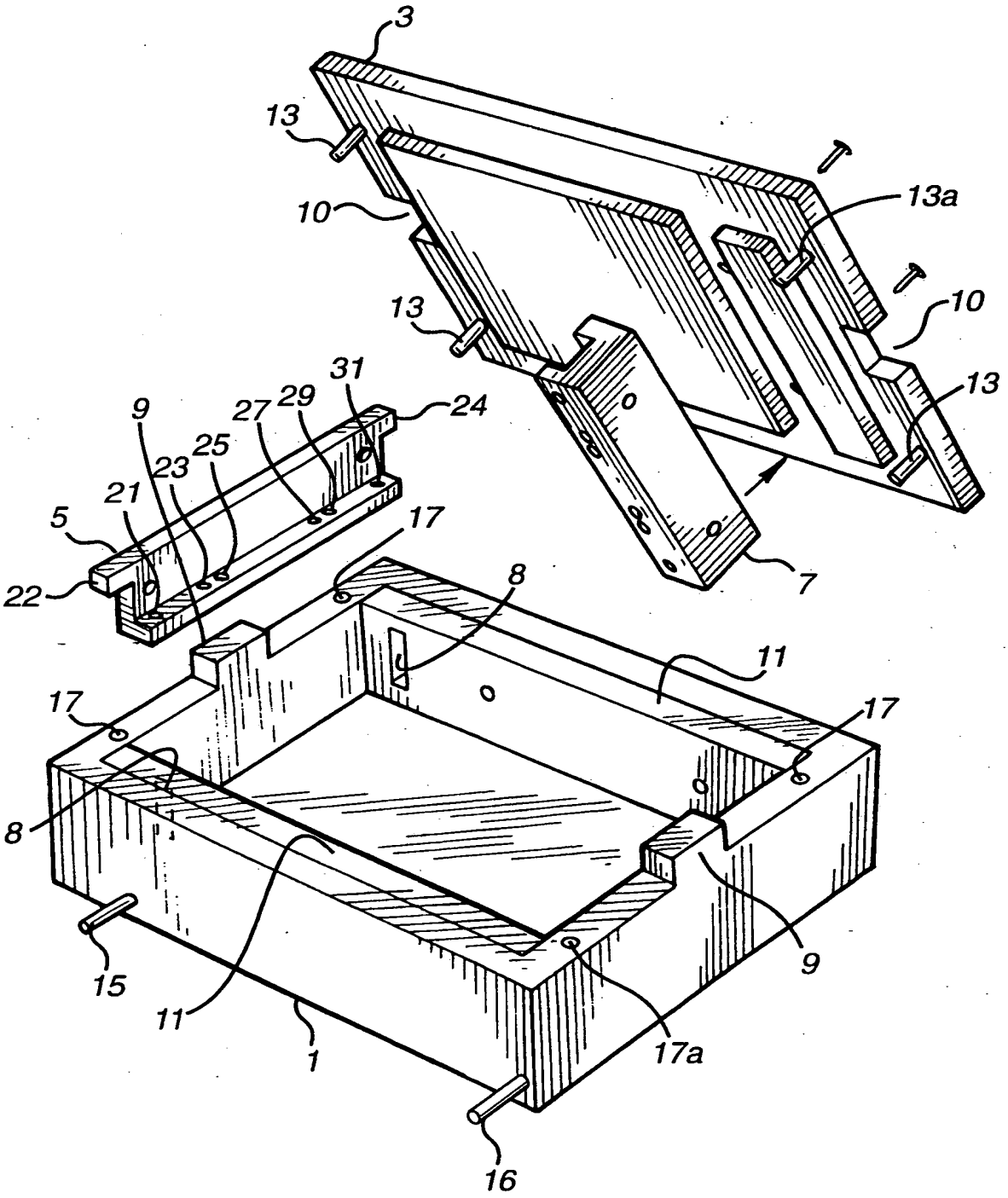
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FIG. 2

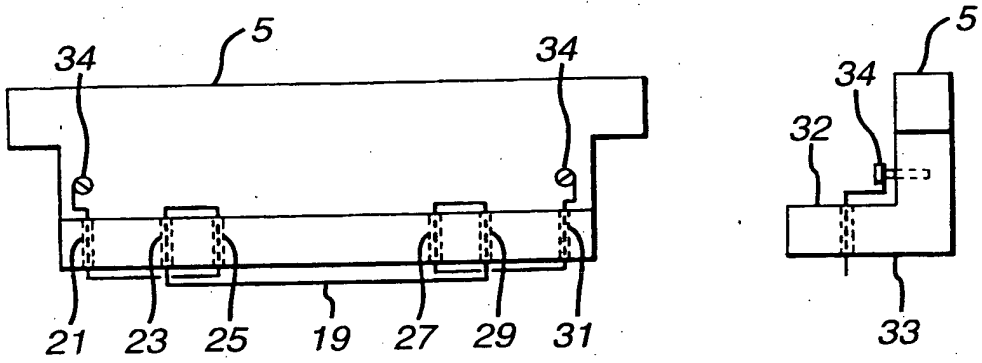


FIG. 3A

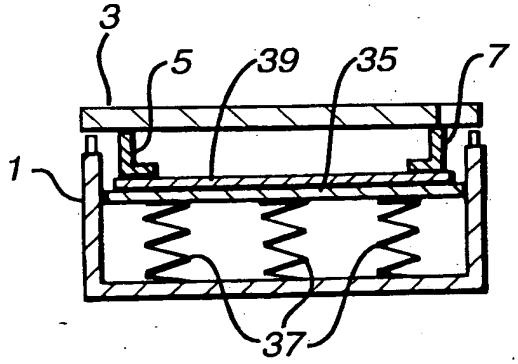


FIG. 3B

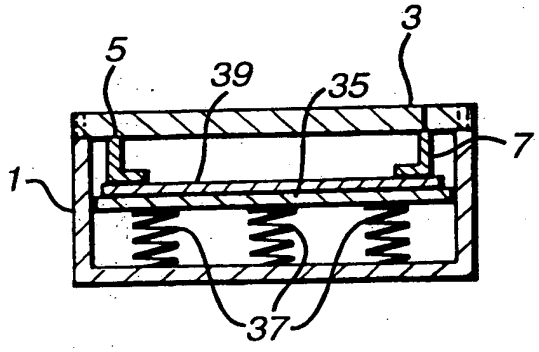


FIG. 4A

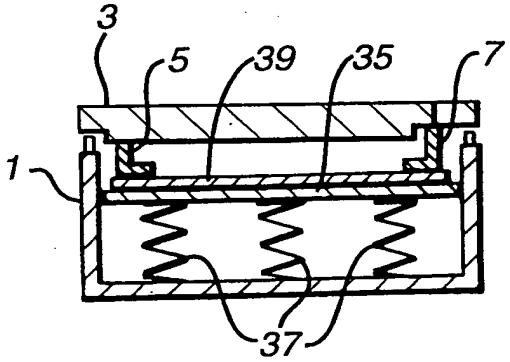


FIG. 4B

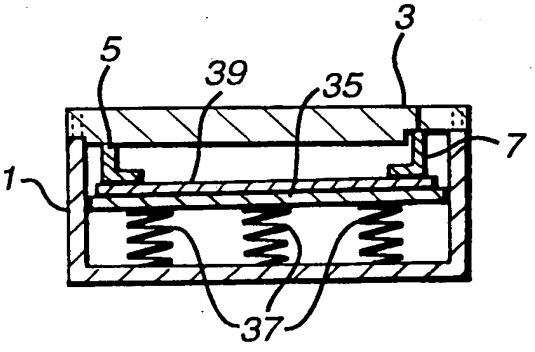
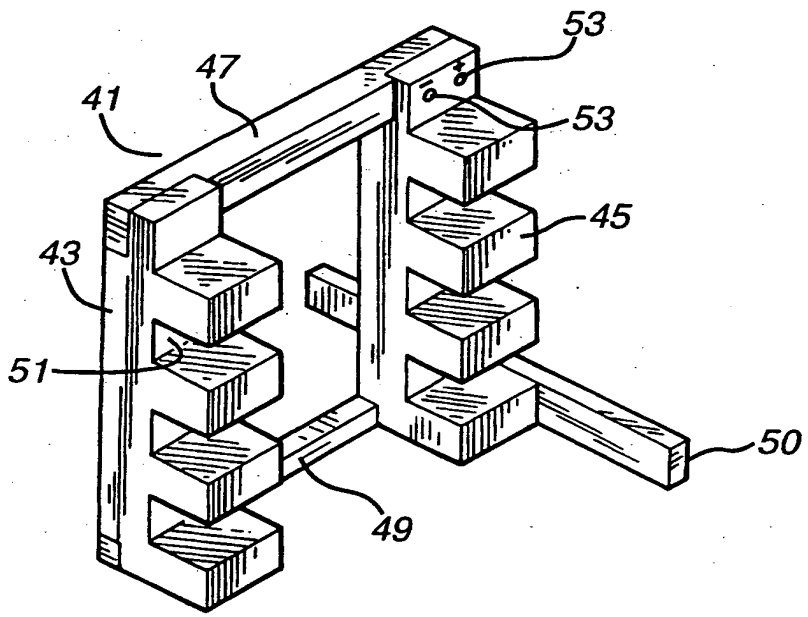


FIG. 5



INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 00/01739

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G01N27/447

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 36170 A (LIFE TECHNOLOGIES INC) 2 October 1997 (1997-10-02) page 12, line 12-22 page 20 -page 24; figure 11	1-6
A	EP 0 872 731 A (TOYO BOSEKI) 21 October 1998 (1998-10-21) page 3, line 8-16	1-7
A	US 5 256 269 A (SOVA OTTO) 26 October 1993 (1993-10-26) column 3, line 49-56 column 5, line 48	1-7

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 September 2000	02. 10. 00

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Müller, T

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 00/01739

Box I Obs rvati ns where certain claims w re found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.: 31-34
because they relate to subject matter not required to be searched by this Authority, namely:

see further information on sheet PCT/ISA/206

2. [X] Claims Nos.: 31-34
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

The claims must not, in respect of the technical features of the invention, rely on references to the drawings (Rule 6.2 a PCT).

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

B x II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [X] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-7

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 31-34

The claims must not, in respect of the technical features of the invention, rely on references to the drawings (Rule 6.2 a PCT).

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-7

   electrophoresis unit with lid, base, pair of electrodes

2. Claims: 8-16

   electrode support having at least three holes

3. Claims: 17-28

   electrophoresis unit with movable electrode supports

4. Claims: 29-30

   frame, being connected to a single power supply

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int[illegible]tional Application No
PCT/GB 00/01739

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9736170 A	02-10-1997	AU 2548997 A	17-10-1997
EP 0872731 A	21-10-1998	JP 10282055 A	23-10-1998
		JP 10288597 A	27-10-1998
		JP 10293119 A	04-11-1998
		US 6090256 A	18-07-2000
US 5256269 A	26-10-1993	CA 2032255 A	15-06-1992